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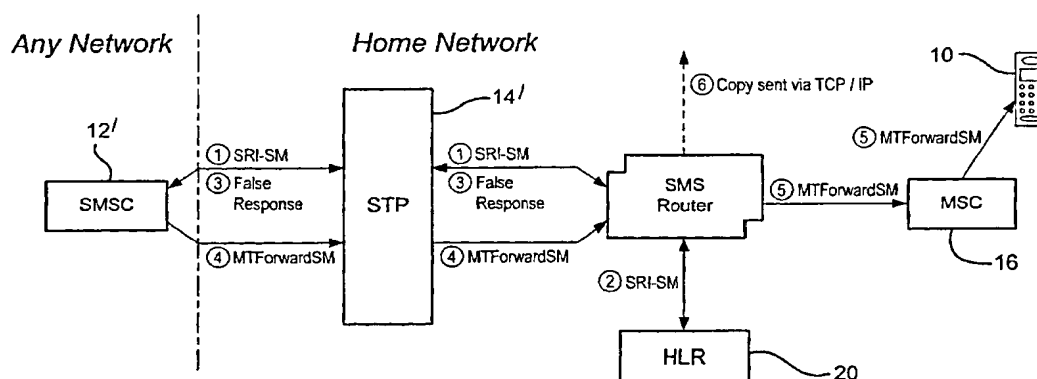
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(54) Title: TELECOMMUNICATIONS SERVICES APPARATUS



(57) Abstract: In a mobile telephone system, a call routing equipment such as an SMS Router (18) receives a routing information request signal (SRI_SM) indicative of a communication such as a text message intended for a mobile terminal (10), and returns a routing information response signal (False Response) indicative of the SMS Router (18) instead of being indicative of the intended mobile terminal (10). This allows processing (Copy sent via TCP/IP) of the resulting text message (MTForwardSM) by the SMS Router (18), such as archiving of the text message, sending the text message to an email address, and/or forwarding the text message to an alternative destination.

- to receive a routing information request signal indicative of a telephone communication intended for a mobile terminal;
- to return a routing information response signal indicative of the telecommunications services apparatus instead of being indicative of the intended mobile terminal; and
- 5 to allow processing of the resulting telephone communication by the telecommunications services apparatus.

- According to another aspect of the invention there is provided a method of processing a telephone communication by means of a telecommunications services apparatus in a
- 10 mobile telephone system, the method comprising:
- receiving a routing information request signal in a call routing means, the routing information request signal being indicative of a telephone communication intended for a mobile terminal;
- returning a routing information response signal indicative of the telecommunications
- 15 services apparatus instead of being indicative of the intended mobile terminal; and
- allowing processing of the resulting telephone communication.

- Further aspects of the invention provide a computer program for carrying out the above method, and a storage medium on which such computer program is stored.

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- The GSM short message service is extremely popular and carries ever increasing levels of traffic world-wide. A large proportion of this traffic is ephemeral. However in some cases it would be desirable to be able to keep a permanent record of short messages, either sent or received. With the present GSM system this is difficult.
- 25 Another useful but currently unavailable facility would be SMS diversion whereby short messages could be received on an alternative handset or diverted to a host system which could act upon the contents of a message. A preferred embodiment of the present invention addresses both of these problems and opens up the possibility of many new types of service with both text (such as GSM) and voice calls. Examples of
- 30 such uses include:

an equipment is not possible using known techniques. The technique to be described allows access to mobile terminated messages, and to incoming calls. The ability to direct all messages or voice calls through a common equipment is very powerful and opens the possibility of a whole range of new applications.

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The following description is in the context of SMS messages.

Two types of message need to be considered, namely those that are mobile originated, i.e. sent by the subscriber, and those that are mobile terminated, i.e. received by the subscriber. In the mobile originated case, it is known that all messages sent by the subscriber will be delivered to the Short Message Service Centre (SMSC) in the subscriber's home network. It is also known that STPs can be programmed to divert all mobile originated messages through an equipment for processing prior to being delivered to the SMSC.

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A suitable equipment for implementing the message processing is a Telsis (RTM) SMS Router, manufactured by Telsis Limited. This equipment may connect to mobile telephone networks using known and standardised signalling protocols including SS7 and TCP/IP. Using known signalling routing techniques, the mobile network can arrange for SMS messages directed to the network's SMSCs to be routed via the SMS Router. The SMS Router is said to be in-line with the SMSC's message reception.

The global GSM system consists of a number of GSM networks. The network on which a subscriber is registered is known as his "home" network. Referring to Figure 1, when a subscriber sends a text message from a handset 10, the message is always delivered in the first instance to an SMSC 12 in his home network. This is the case even when the subscriber is roaming on another network. The SMSC 12 then queries the (not shown) Home Location Register (HLR) of the destination subscriber's network and the message is then forwarded accordingly.

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The global address of the SMSC 12 is normally programmed into the subscriber's handset. This global address is interpreted by Signalling Transfer Points (STPs) 14 in

true regardless of the current locations of either the sender or the recipient. The SMS Router 18 is then able to implement any desired processing on the text message, for example archiving to email (Copy sent via TCP/IP), before finally forwarding the message (MTForwardSM) onto the actual location of the handset 10 of the subscriber as indicated on the HLR 20. This technique is illustrated in Figure 3 and the corresponding ladder diagram of Figure 4.

In Figure 4, the HLR query (2) is shown being made immediately the SRI_SM message arrives at the SMS Router. In practice, since the HLR response is not used until step (5), the HLR query may be delayed until after step (3), or delayed until after step (4). The reply may be sent before or after the HLR is queried, and before or after the HLR response is received.

The combined effect of using the presently known technique for mobile originated (MO) SMS and using the present invention for mobile terminated SMS is that all messages to and from a subscriber may be caused to pass through an SMS Router before reaching their destination. The SMS Router is capable of acting on the contents or addresses within the message to provide additional intelligent functionality in the network, such as message archiving or grooming, sending the message to an email address, and/or forwarding the message to an alternative destination.

Very similar techniques can be used for voice calls. Instead of the SRI-SM message used for SMS, voice calls are delivered to the correct mobile station using an SRI message (Send Routing Information) directed at the HLR. If the STPs are programmed to divert SRI messages to the SMS Router, then the same principle can be used to cause incoming voice calls to be diverted via, for example, call screening equipment, a recording equipment which could make a recording in the manner described in PCT Patent Application Publication No. WO 02/32092, or any other enhanced voice service. Outgoing voice calls may be diverted to the equipment by known techniques, for example the use of short dialling prefixes.

CLAIMS

1. A telecommunications services apparatus for use with a mobile telephone system, the apparatus comprising call routing means operable:
5 to receive a routing information request signal indicative of a telephone communication intended for a mobile terminal;
 to return a routing information response signal indicative of the telecommunications services apparatus instead of being indicative of the intended mobile terminal; and
10 to allow processing of the resulting telephone communication by the telecommunications services apparatus.
2. Apparatus according to claim 1, wherein the call routing means is operable to forward the resulting telephone communication.
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3. Apparatus according to claim 2, wherein the mobile telephone system includes a home location register, and wherein the call routing means is operable to obtain information concerning the location of the intended mobile terminal from the home location register, and to forward the resulting telephone
20 communication to the intended mobile terminal.
4. Apparatus according to claim 1, claim 2 or claim 3, wherein the telephone communication is a telephone text message.
- 25 5. Apparatus according to claim 4, wherein the processing of the telephone communication comprises archiving of the text message.
6. Apparatus according to claim 4 or claim 5, wherein the processing of the telephone communication comprises sending the text message to an e-mail
30 address.

14. A computer program for implementing a method according to any one of claims 11 to 13.
15. A storage medium storing a computer program according to claim 14.

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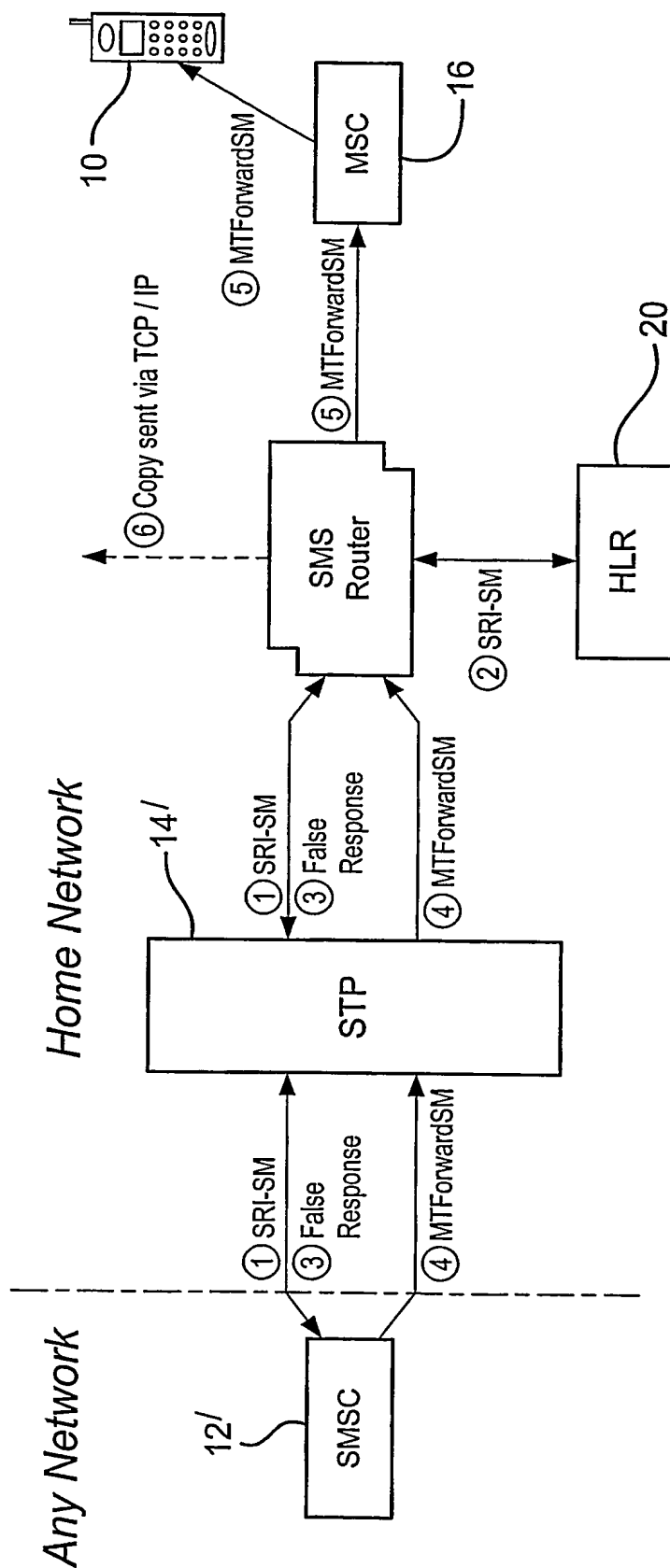


Fig.3

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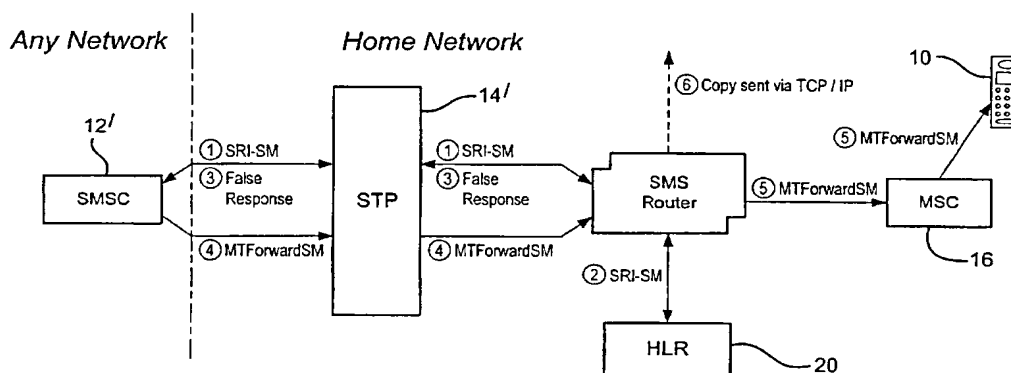
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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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| Y | WO 99/12364 A (NOKIA TELECOMMUNICATIONS OY ;LUMME MARTTI (FI); HIPPELAEINEN LASSI) 11 March 1999 (1999-03-11) abstract page 3, line 18 -page 7, line 18 figures 1,2 ----- | 5,6 |
| A | "Digital cellular telecommunications system (Phase 2+); Lawful Interception; Stage 2 (3GPP TS 43.033 version 4.0.0 Release 4)" ETSI TS 143 033 V4.0.0, March 2001 (2001-03), pages 1-25, XP002284760 paragraph 6 ----- | 1-15 |
| A | WO 00/28773 A (ADC NEWNET INC) 18 May 2000 (2000-05-18) page 5, line 24 -page 8, line 5 figure 3 ----- | 1-15 |